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K. P. Miller

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Scott A. Rosenberg § Group Art 2673
and § Unit:
Anthony C. Miller §
Serial 09/365,363 §
No.: §
Filed: JULY 30, 1999 §
For: LIQUID CRYSTAL OVER §
SEMICONDUCTOR DISPLAY § Atty. Dkt.
WITH ON-CHIP STORAGE § No.: INTL-0219-US

Commissioner for Patents
Washington DC 20231

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REPLY TO PAPER NO. 3

Sir:

In response to the office action mailed March 26, 2001, reconsideration is requested in view of the following remarks:

Remarks:

Claims 1-12 relate to a display including a liquid crystal over semiconductor (LCOS) pixel array formed in a substrate and a memory coupled to the array, the memory also formed in the substrate.

Claims 1-12 were rejected over the patent to Quanrud. However, Quanrud does not in any way relate to an LCOS structure. In Quanrud, the memory is not integrated into the same structure that also integrates the liquid crystal device. Moreover, it is not even clear that the liquid crystal device in Quanrud is, in fact, integrated into a semiconductor substrate.

Date of Deposit: 4/26/01
I hereby certify under 37 CFR 1.8(a) that this correspondence is being deposited with the United States Postal Service as **first class mail** with sufficient postage on the date indicated above and is addressed to the Commissioner for Patents, Washington DC 20231.
Lisa O'Sullivan

For example, column 5, states that "the substrate may be any material on which the display circuit may be attached or formed. In a preferred embodiment, the substrate is a semiconductor, such as silicon, on which the display circuits are formed by one or more of a variety of methods known in the art." See column 5, lines 23-28 (emphasis added).

This language certainly does teach a liquid crystal over semiconductor device. With LCOS technology, a liquid crystal display is formed in association with the same substrate that forms CMOS circuit elements. See the specification at p. 3, lines 25 through p. 4, line 3.

Moreover, in column 12, Quanrud states that the pixels may be liquid crystal displays, spatial light modulators, gratings, mirror light valves, and LED displays. Certainly, the variety of technologies amenable to Quanrud's display indicates that, in fact, Quanrud is not talking about LCOS technology. Moreover, the fact that nowhere does Quanrud ever mention LCOS technology further adds force to this conclusion.

In short, there is nothing in Quanrud that suggests a liquid crystal over semiconductor pixel array, or a memory formed in the same structure with the pixel array. Therefore, claim 1 and the claims dependent thereon are in condition for allowance.

Similarly, method claim 9 calls for forming pixel array in a liquid crystal over semiconductor substrate. A memory is formed in the liquid crystal over semiconductor substrate. Again, no such method steps are anywhere suggested in Quanrud. Therefore, claim 9 and the claims dependent thereon patentably distinguish over Quanrud.

Claims 13-20 relate to a display with a refresh circuit to refresh the memory array and the pixel array. These claims were also rejected under § 102 over Quanrud. However, the cited

material in column 6 merely talks about refreshing the memory cells. It says nothing about refreshing the pixel array. Thus, there is no indication that the same refresh circuit is utilized to refresh both the memory and pixel arrays. Therefore, reconsideration of the rejection of claim 13 and the claims dependent thereon is respectfully requested.

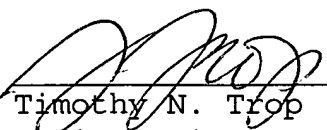
Likewise, Quanrud fails to teach "refreshing said memory array and said pixel array in the same refresh cycle." Therefore, claim 17 and the claims dependent thereon patentably distinguish over the Quanrud reference.

Finally, claim 25 calls for a display with an LCOS substrate that also includes a memory array. As discussed above, Quanrud fails to teach such a structure and therefore the claims patentably distinguish over Quanrud.

In view of these remarks, the application is now in condition for allowance. The Examiner's prompt action in accordance therewith is respectfully requested.

Respectfully submitted,

Date: 4/26/01



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